What is Claimed:

1   1.   A device for monitoring wear of dicing saw blade, the device
2   comprising:

3   a light source to emit light onto an end surface of the saw blade;

4   a sensor for receiving a reflection of a portion of the light from the
5   end surface of the saw blade; and

6   a processor coupled to the sensor for determining wear of the saw
7   blade based on an output from the sensor.

1   2.   The device according to claim 1, wherein the sensor
2   determines a distance to the edge of the saw blade based on triangulation.

1   3.   The device according to claim 1, further comprising first
2   focusing means for focusing the reflected light onto the plurality of sensors.

1   4.   The device according to claim 1, wherein the sensor is a
2   plurality of sensors.

1   5.   The device according to claim 4, wherein each of the
2   plurality of sensors determines a respective distance to the edge of the saw blade
3   based on triangulation.

1   6.   The device according to claim 4, further comprising a
2   respective plurality of first focusing means for focusing the reflected light onto
3   the plurality of sensors.

1   7.   The device according to claim 1, wherein the monitoring
2   device is mounted on a cooling block of the saw blade.

1   8.   The device according to claim 1, wherein the light impacts
2   the end of the saw blade substantially orthogonal to an axis of the saw blade.

1   9.   The device according to claim 1, wherein the light impacts
2   the surface of the saw blade substantially normal to a cutting edge of the saw
3   blade.

1   10.   The device according to claim 1, wherein the sensor is a
2   position sensitive detector.

3   11.   The device according to claim 1, wherein the sensor is a
4   CCD detector.

1   12.   The device according to claim 1, wherein the sensor
2   produces an output based on a position of the reflected light on a surface of the
3   sensor.

1   13.   The device according to claim 1, wherein the emitter is a
2   laser diode.

1   14.   The device according to claim 1, wherein the emitter
2   provides a light output having a wavelength of between about 600 to 800 nm.

1   15.   The device according to claim 1, wherein the processor
2   determines blade wear based on a measured distance between the light source and
3   a cutting edge of the saw blade.

1   16.   The device according to claim 15, wherein the processor
2   stores successive wear data from the saw blade in a database.

1   17.   The device according to claim 1, wherein the processor
2   provides a warning output based on a predicted wear of the saw blade, the
3   predicted wear determined from the successive wear data.

1   18.   The device according to claim 1, wherein the predicted wear
2   of the blade is based on a comparison of the successive wear information stored
3   in the database.

1   19.   The device according to claim 1, further comprising a
2   monitor for displaying at least one of i) a wear rate of the saw blade, and ii) an
3   estimated time for replacement of the saw blade.

1   20.   The device according to claim 1, wherein saw blade wear is
2   determined in real time.

1   21.   A method for monitoring wear of a dicing saw blade, the
2   method comprising the steps of:

3   emitting light onto an cutting edge of the saw blade;

4   receiving a reflection of a portion of the light from the edge of the
5   saw blade; and

6   determining wear of the saw blade based on the reflected light.

1   22. The method according to claim 21, further comprising the step
2   of displaying at least one of i) a wear rate of the saw blade, and ii) an estimated
3   time for replacement of the saw blade.

1   23.   A method for monitoring wear of a dicing saw blade, the
2   method comprising the steps of:

3   emitting light onto a cutting edge of the saw blade;

4   receiving a reflection of a portion of the light from the edge of the
5   saw blade;

6   triangulating a distance to the saw blade base on the reflected light
7   and

8   determining wear of the saw blade based on the triangulated
9   distance.

1   24.   A device for monitoring wear of dicing saw blade, the device
2   comprising:

3   means to emit light onto a surface of the saw blade;

4   receiving means for receiving a reflection of a portion of the light
5   from the surface of the saw blade; and

6   processing means coupled to the receiving means for determining
7   wear of the saw blade based on an output from the receiving means.

1   25.   The device according to claim 24, further comprising:

2   display means for displaying at least one of at least one of i) a wear
3   rate of the saw blade, ii) a diameter of the saw blade, and ii) an estimated time
4   for replacement of the saw blade.

1   26.   The device according to claim 25, further comprising memory
2   means for storing the information displayed by the display means.

1   27.   The device according to claim 25, further comprising means for
2   predicting wear of the saw blade.

1   28.   A device for use with a dicing saw to monitor wear of a
2   dicing saw blade, the device comprising:

3   a light source to emit light onto the saw blade; and

4   a sensor for receiving at least a portion of the light from the light
5   source via the saw blade, the received portion of the light based on a wear of the
6   saw blade,

7   wherein the device is mounted on a cooling block of the dicing saw.